Sampling Strategies in Land Use Mapping Using Skylab Data

EREP Investigation No. 520

Monthly Progress Report - 2

July, 1973

Principal Investigator: Dr. David S. Simonett
Director, Land Use & Urban Applications
Earth Satellite Corporation
1747 Pennsylvania Avenue, N. W.
Washington, D. C. 20006

Prepared for: NASA Manned Spacecraft Center
Houston, Texas 77058

INTRODUCTION

This investigation is designed to perform computer processing of S-192 digital tapes to investigate sampling proportions, distance decay functions, accuracy limits, boundary delineations and detection of point/area land use categories as derived from computer training and prediction models. Manual interpretation of S-190 data will also be performed to provide a basis for comparison with results of S-192 data processing.

The primary efforts during this reporting period have concentrated on collecting appropriate ground truth data for the Washington, D.C. - Baltimore test site. Although uncertainties in the orbital configuration of Skylab have introduced unexpected complications in collecting ground truth data, this phase of the project is progressing as scheduled.

WORK PERFORMED THIS REPORTING PERIOD:

Ground Truth Data Acquisition

Ground truth data obtained at the time of SL 2 overpass have been formatted and made ready for computerized data bank, and computer programs have been written for data retrieval. Field inventory forms have been revised for ease of coding information.

Orbital changes subsequent to SL 2 overpass resulted in the test site being shifted approximately 60 miles east. This has resulted in most of the ground truth collected for SL 2 overpass being outside the area to be imaged on SL 3. The ground track for SL 2 is shown in Figure 1. SL 3 data acquisition is anticipated on the descending mode with data possibly being

obtained on the ascending mode. Consequently, because of funding limitations, a detailed ground truth data collection mission for SL 3 is planned only for the area anticipated to overlap with the area imaged on SL 2. Less detailed ground truth data will be obtained from RB-57 aircraft data obtained over the test site on 14 June 1973. A sampling scheme similar to that used on SL 2 has been devised.

Aircraft/Spacecraft Data Acquisition

Skylab data is tentatively scheduled to be acquired on 5 August 1973 (GT61) over the Washington, D.C. - Baltimore test site and on 12 August 1973 (GT 13) over the Alice Springs, Australia Test Site. Skylab data obtained over the Washington, D.C. - Baltimore test site on 12 June 1973 has not yet been received.

RB-57 aircraft data, obtained over a portion of the Washington, D.C. - Baltimore test site on 14 June 1973 were received on 25 July 1973. The data are all of good quality, however, the area covered by the photography provides coverage for only a small portion of the area imaged with the S-192 scanner on SL 2 (Figure 1). Obviously, areas on the western edge and eastern edge were not covered on the RB-57 aerial photography, making it difficult to determine detailed land use categories for those areas at the time of the SL 2 overpass. Requests have been submitted to NASA to obtain RB-57 imagery flown for other investigators that will provide coverage over the SL 2 ground track.

Work To Be Performed Next Period

Collection of ground truth data for the SL 3 overpass of the Washington, D.C. - Baltimore test site will be completed and data will be formatted and made ready for entry into data bank.

Planning of aircraft data collection missions over the Alice Springs, Australia site will be completed.

Analysis of RB-57 aircraft data and S-190 data will begin. Image interpretation will provide data to be used to generate maps showing boundary delineation of regional and sub-regional land use categories. This data will also be used in Task VII (Quantitative Comparison of Map Products ...) as described in the Milestone Plan.

Significant Results:

There are no significant results to report at this time.

Publications, Papers, Talks, etc.

None.

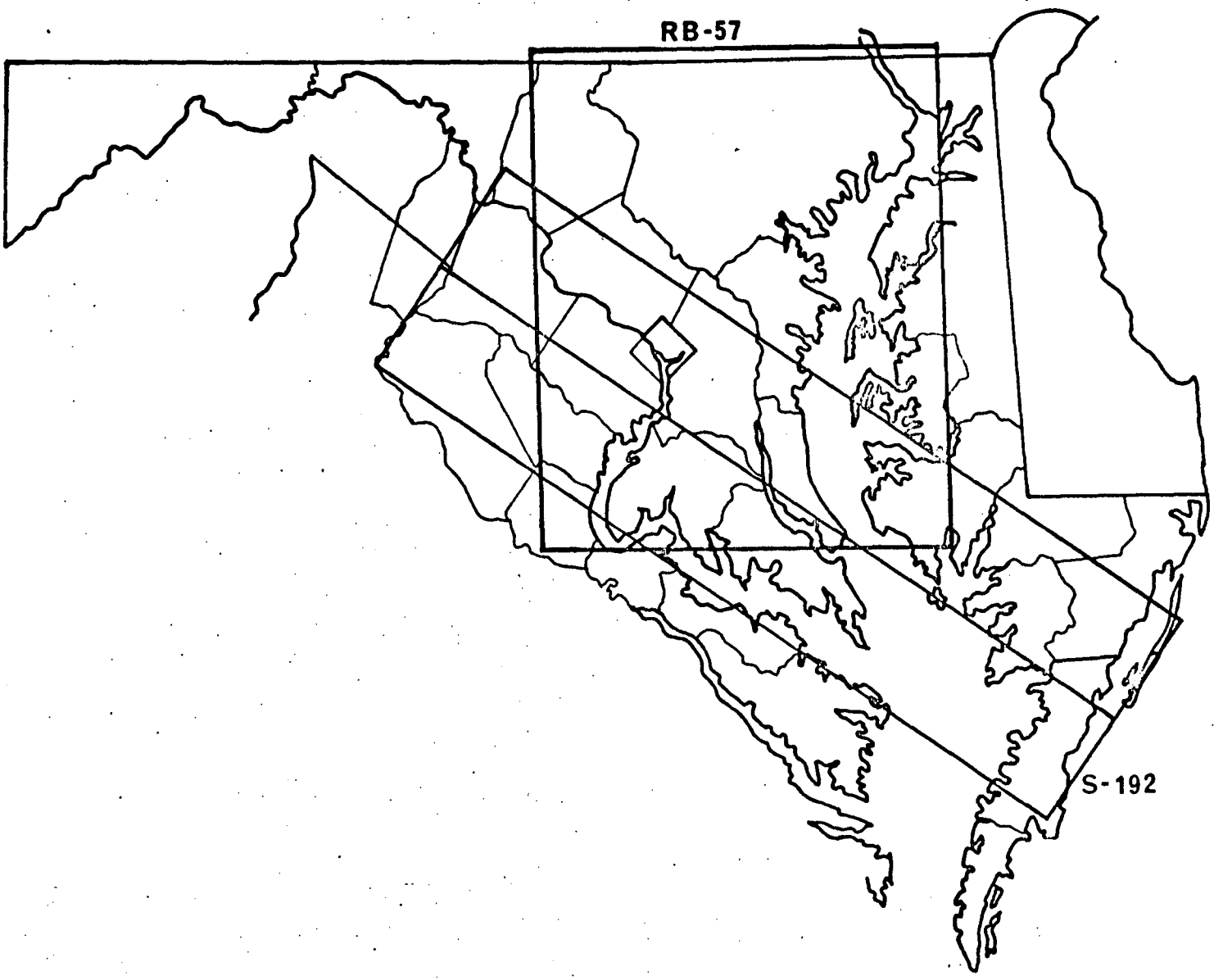

Figure 1 - Map of Washington, D.C. - Baltimore test site showing the areas imaged on the RB-57 aircraft data and S-192 multispectral scanner data.